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Doppler flow measurements and smoking in pregnancy

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30 pregnant smokers were evaluated by Doppler ultrasound to assess the possible effect of smoking a cigarette of her commonly-used brand.

We used a duplex doppler scanner (ADR 5000, Kranzbühler) to evaluate three vessels (fetal aorta, umbilical artery, uteroplacental vessels). After smoking, maternal pulse and blood pressure were registered in three minute intervals. Additionally, we included continuous CTG monitoring.

The examination time varied between 27-52 minutes (mean: 37). All doppler and laboratory parameters were evaluated before smoking (including nicotine and cotinine levels). Following that, the patient smoked a cigarette within about 5 minutes. Immediately afterwards continuous registration was started. 30 minutes later a second blood sample was taken for laboratory analysis.

Mean nicotine-/cotinine serum levels before smoking were 5.9/112 ng/ml, 30 minutes later 9.8/125 ng/ml. In pregnancies with no previous pathology (N=27) cigarette smoking had no discernible negative influences on doppler parameters in fetal and maternal placental vessels. With reluctance (N=3 cases) this was also true for complicated pregnancies.

Fetal heart rate in cases with uncomplicated pregnancy were found to be unchanged during the 30 minutes. In one case with hypertension in pregnancy and in one diabetic mother there was an increase in fetal heart rate during the first 9 minutes following maternal smoking.

We conclude that there are no acute changes which can be depicted with doppler flow parameters after cigarette smoking in uncomplicated pregnancies.

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